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ALLIANT ENERGY

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April 30, 2002

RECEIVED
2002
Electric Division

Mr. James D. Loock
Chief Engineer – Electric Division
Public Service Commission of Wisconsin
P.O. Box 7854
Madison, WI 53707-7854

PUBLIC SERVICE COMMISSION MASTER FILE COPY WISCONSIN

RE: Compliance with Wis. Adm. Code ch. PSC 113 sections 0604 and 0605

Dear Mr. Loock:

On behalf of Wisconsin Power and Light Company I am enclosing documents to comply with Wis. Adm. Code PSC 113.0604, Annual Report, and PSC 113.0605, Initial historic reliability performance report.

A couple of items should be noted when reviewing the attached information. The outage performance data includes all outages including those caused by major storms. This year we have changed the process and criteria of defining the worst-performing circuits as allowed in PSC 113.0604(2)(c). This process and criteria change was discussed with Jim Lepinski of your staff earlier this year.

If you or the Public Service Commission of Wisconsin staff have any questions relate to this report, please contact me by telephone at (608) 458-5039 or by email at terrynicolai@alliantenergy.com.

Sincerely,

Terry Nicolai

Terry Nicolai
Senior Manager, Wisconsin Regulatory Relations

Attachment

CC: Joe Ell
John Larsen
Theresa Mulford
Doug Kopp
Pat Kelly
Bob Rusch
Dave Roush

Wisconsin Power & Light Company

PSCW 113 Sections 0604 and 0605 Report
April 30, 2002

PSCW 113.0604 2a) Overall Reliability

Alliant Energy - Wisconsin Power and Light continues to place a high priority on system reliability. Net of major storms, Wisconsin Power and Light's reliability indices improved again in 2001. We believe these results demonstrate our serious commitment to reliability.

When comparing normal system operations WPL continues to operate more than 19,000 miles of distribution system, well. In 2001, overall indices were impacted by several devastating storms experienced in early summer. In June 2001, a series of storms moved through central Wisconsin causing wide spread outages in the Beaver Dam and Port Edwards zones. These storms caused the Beaver Dam zone SAIDI to increase from 1.57 in 2000 to 11.48 in 2001 and SAIFI to increase from 1.22 to 1.87. From this same storm system, the SAIDI for the Port Edwards zone increased from 4.19 to 12.40, and SAIFI increased from 2.75 to 3.33. By removing storm outages from the calculations, the overall SAIDI for WPL is 109 minutes. This is a 9-minute improvement in the net of major storm SAIDI performance as compared to 2000. The 2001 SAIFI, excluding major storms, was 1.47 compared to 1.39 for 2000. In summary, WPL is proud of the efforts all employees have made over the past year to provide high-quality service to our customers and is committed to continued improvement.

Year 2001			
Zone	SAIFI	SAIDI	CAIDI
Baraboo	1.43	3.71	2.60
Beaver Dam	1.87	11.48	6.14
Beloit *	1.31	2.87	2.19
Dane County	1.24	1.79	1.44
Fond du Lac	1.09	1.70	1.56
Janesville	1.42	2.28	1.61
Mineral Point	1.63	3.02	1.85
Port Edwards	3.33	12.40	3.72
WPL Total	**1.49**	**4.21**	**2.83**
These are calculated using ALL customer outages (including major storms).			

- Note: Beloit also includes South Beloit Gas and Electric hours.
- In 2001 major storms accounted for over 59 million customer outage minutes or roughly 57% of the total SAIDI hours.
- ATC Transmission contributed 113 outages for a total of 2.25 million customer outage minutes.

PSCW 113.0604 2b) 5% Worst Performing Circuits

We have updated the methodology that is used to calculate WPL's worst performing circuit analysis for 2001 by using circuit results based on PSCW 113.0604 2c below. The 2001 methodology focused efforts on circuits that in general performed well during the year with the exception of a major storm event. WPL feels the new method will focus efforts on systems that may contribute to customer dissatisfaction. The table below provides a list of circuits that would have been analyzed this year under the old methodology.

Zone Name	Circuit	Major Storm		Zone Name	Circuit	Major Storm
Janesville	MCUN1642	No		Beaver Dam	WIND561	Yes
Beloit	CRNJ993	No		Port Edwards	RUDA203	Yes
Beloit	BCHM1823	No		Port Edwards	VESA859	Yes
Beaver Dam	WIRD459	Yes		Beaver Dam	OMRD416	Yes
Beaver Dam	FOVD356	Yes		Beaver Dam	OMRD427	Yes
Beaver Dam	WIRD463	Yes		Beaver Dam	HONF80	Yes
Port Edwards	VESA863	Yes		Beaver Dam	WIND831	Yes
Beaver Dam	WEDE1007	Yes		Port Edwards	PITA1328	Yes
Beaver Dam	WIRD373	Yes		Beaver Dam	OMRD308	Yes
Port Edwards	PITA1329	Yes		Beaver Dam	HAND569	Yes
Beaver Dam	HAND570	Yes		Baraboo	NCKE934	No
Beaver Dam	WIND565	Yes		Port Edwards	POEA662	Yes
Beaver Dam	PLDD752	Yes		Baraboo	NCKE937	No
Beaver Dam	OMRD312	Yes		Beaver Dam	REDD378	Yes
Beaver Dam	PLDD751	Yes		Port Edwards	SARA723	Yes
Beaver Dam	FOVD355	Yes		Beaver Dam	FOVD354	Yes
Port Edwards	ARND2109	Yes		Beloit	KATM1437	No
Mineral Point	REWK143	No		Beaver Dam	HAND574	Yes
Port Edwards	RUDA201	Yes				

PSCW 113.0604 2c) Alternative Criteria

Frequency and duration will be calculated at the customer level for the 2002 report of 2001 data. This process will identify the cumulative effect of upstream device operations observed by each customer. The process groups customer, based on outage frequency and outage duration minutes at the circuit level. The example in the table below demonstrates the methodology on customer interruptions. For DADE909 a total of 116 customers experienced 4 outages in 2001. This places the 116 customers in the 4-interruption group. The process then takes the number of customers in the group and multiplies it by the group value. Therefore, the 116 customers will contribute 464 points to circuit DADE909. After the points are calculated for each group, they are summed to get the total interruption points. For customers that experienced two or less outages the group value is zero (to prevent circuits with large customer counts and low outage frequency from influencing the analysis). A similar process is followed with cumulative outage duration minutes to get the total duration points for each circuit. The two point values are then added together to calculate total performance points. Circuits are ranked on total performance points. The data used in this analysis excluded major storms and customer equipment failures.

Interruption Performance Ranking Analysis Example							
Ckt ID	Customers With 1 int.	Customers With 2 int.	Customers With 3 int.	Customers With 4 int.	Customers With 5 int.	Customers With 6 int.	Int. Points
Group Value	0	0	3	4	5	6	
DADE909	82	17	2	116	80	3	
DADE909 points	82x0=0	17x0=0	2x3=6	116x4=464	80x5=400	3x6=18	**888**
NBDF756	186	54	153	0	0	0	
NBDF756 points	186x0=0	54x0=0	153x3=459				**459**

5% Worst Performing Circuits					
Zone	Circuit ID	Sub	Zone	Circuit ID	Sub
Mineral Point	PIOK265	PIO	Baraboo	PORC757	POR
Beloit	TURJ532	TUR	Beaver Dam	RDRE1405	RDR
Fond Du Lac	NICS64	NIC	Janesville	PVWN1557	PVW
Beloit	DELM1516	DEL	Beloit	TURJ534	TUR
Mineral Point	HVLK3337	HVL	Port Edwards	PLRD1229	PLR
Beaver Dam	3STF27	3ST	Beaver Dam	RIPE572	RIP
Janesville	LIBN3524	LIB	Beloit	KATM1437	KAT
Beloit	TURJ533	TUR	Baraboo	OKEB861	OKE
Fond Du Lac	ESSP1670	ESS	Beloit	KATM433	KAT
Baraboo	KILX40	KIL	Port Edwards	KESD1923	KES
Baraboo	KILX69	KIL	Beaver Dam	MOOE741	MOO
Beloit	DELM248	DEL	Beloit	LAGM1	LAG
Dane County	TOCN2442	TOC	Beloit	LAGM711	LAG
Dane County	TOCN2443	TOC	Baraboo	HAMC1076	HAM
Janesville	PVWN2250	PVW	Dane County	SUPN1075	SUP
Baraboo	TROB1294	TRO	Janesville	SMEL725	SME
Fond Du Lac	RRDP1605	RRD	Beloit	EARJ1757	EAR
Beloit	WIBM2557	WIB	Mineral Point	TROB1293	TRO
Baraboo	NCKE934	NCK			

Circuit
PIOK265

Zone: Mineral Point		*Distribution Engineer*: Barry Bauman		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1852	498.38	3.69	135.24	2001

Root Cause of Performance

During 2001 there were 908,540 outage minutes on circuit PIO K265. High winds produced 412,324 minutes, lightning - 208,271 minutes, and tree growth - 183,921 minutes. On 10/25/01 high winds resulted in a tree falling across the line causing 1,854 customers to have a 3 hour and 26 minute outage. This outage resulted in 381,924 outage minutes which is 42% of the 2001 outage minutes on this circuit. The next largest outage was tree growth with 183,348 outage minutes which is 20% of the 2001 outage minutes. The third largest outage was caused by a failed disconnect that resulted in a pole fire. This 3 hour and 14 minute outage affected 304 customers resulting in 58,976 customer outage minutes which is 6.5% of the 2001 total outage minutes.

Justification for no action

The tree limb problem has been solved as the result of cycle line clearence being performed on this circuit in 2001. The disconnects were temporarily bypassed and then replaced as part of the Elm Street rebuild project.

	Project	*Projected Year*
1	None	
2		
3		
4		

Circuit
TURJ532

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1373	474.22	4.35	108.94	2001

Root Cause of Performance

There were four lightning outages that accounted for 82.5% of total 631,216 customer outage minutes on the circuit. The lightning caused two failed fuses, a downed primary conductor, and a blown power fuse on the substation transformer. The blown power fuse outage accounted for 162,554 customer outage minutes. The 69 kV bus does have arresters on it, and there are no arresters on the transformer.

Solution/Action to be taken

1) 69 kV and 12 kV arresters are scheduled to be added to the power transformer in 2002 under the Turtle Substation 12kV Bus Rebuild substation scope. 2) The Townline Rd REBLD 2.4 MI 3PH distribution scope is scheduled to be constructed in 2003. This project will replace 2.4 miles of old 1/0 copper - the wire that was burned down by a lightning related outage. 3) Create scope project Noss Rd RBLD 3.0 MI 1PH to rebuild 3.0 miles of 8A Copperweld installed in 1938 that was involved in a downed conductor outage. 4) Also create scope 5043 S US HWY 51 Cable Replmt 112 FT 1PH. This project would replace #2 AL cable installed in 1973 that failed in 2001. In addition, work will be done to verify that J288-80T and J396-20T have adequate lightning protection and add if needed.

	Project	*Projected Year**
1	Turtle Substation 12kV Bus Rebuild	2002
2	Townline Rd REBLD 2.4 MI 3PH	2003
3	Noss Rd RBLD 3.0 MI 1PH	2003
4	5043 S US HWY 51 Cable Replmt 112 FT 1PH	2003

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit

NICS64

Zone: Fond Du Lac		*Distribution Engineer*: Steve Weston		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1756	254.86	2.34	108.84	2001

Root Cause of Performance

There were two outages to the entire circuit that were caused by a switchgear that failed. This switchgear has been replaced. One of the outages was reported to have 150 customers out of power when actually there were only 6. With the outages for the switchgear removed and the corrections made to the other outage, the new SAIDI is 18.13 and the SAIFI is 0.27.

Justification for no action

This circuits poor performance in 2001 can be attributed to one piece of equipment and that equipment has been replaced.

	Project	*Projected Year*
1	None	
2		
3		
4		

Circuit
DELM1516

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1066	826.25	3.818	216.39	2001

Root Cause of Performance

On 4/7, 4/11, 6/11, 7/22, and 9/3 there were high wind outages that totaled 1,078,138 customer outage minutes. On each of these dates there were multiple outages, which greatly increased the outage restoration times. In additon there were thirteen tree related outages on the circuit. There were multiple wildlife and lightning related outages for M334-20T, M784-S, and M1146-30T.

Solution/Action to be taken

1) Circuit tree trimming is scheduled in 2002. 2) Verify that M334-20T, M784-S, and M1146-30T have adequate lightning and wild life protection and add if needed. 3) Propose scoping 0.6 miles of #2 & #4 CU installed in 1936 for replacement on scope North Shore Dr RBLD 0.6 MI 3PH. The two broken conductor outages were in the same area.

	Project	*Projected Year**
1	Circuit tree trimming	2002
2	Verify adequate lightning protection	2002
3	North Shore Dr RBLD 0.6 MI 3PH	2004
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
HVLK3337

Zone: Mineral Point		*Distribution Engineer*: Barry Bauman		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
852	792.88	4.41	179.7	2001

Root Cause of Performance
Hooterville substation recloser operations were caused by lightning strikes on the line between the Hooterville substation and the Village of Barneveld. Additional outages resulted from mechanical failure of the high neutral line built in 1951 located between Barneveld and the normally open switch with Dane County Zone.

Solution/Action to be taken
Add overvoltage protection to the distribution line between the substation and Barneveld and rebuild the distribution line between Barneveld and the normally open switch located between the Mineral Point and Dane County Zones.

	Project	*Projected Year**
1	Add arresters	2003
2	CTH ID BARNEVELD HI NEU RBLD 2 MI	2004
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
3STF27

Zone: Beaver Dam		*Distribution Engineer*: Al Damyen		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1766	220.51	2.33	124.55	2001

Root Cause of Performance

The major cause for the outages on circuit F27-S was the opening of the substation recloser F27-S. There were three lockouts on the substation recloser. One outage was caused by a PMH switchgear that failed and the other two were caused by lightning on the main circuit stem.

Solution/Action to be taken

The failed switchgear was replaced in November 2001 with a new PMH switchgear. After talking to the district, the lightning concerns will be mitigated by the rebuilding of an antiquated (old 34 KV line) distribution line on Prospect St. that stretches into the rural area.

	Project	*Projected Year**
1	Prospect St. Rebuild 4.0MI 3PH	2003
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
LIBN3524

Zone: Janesville		*Distribution Engineer*: Pat Runde		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1650	235.43	3.28	71.69	2001

Root Cause of Performance
With the addition of Tripp and Venture substations the number of customers on the circuit has been reduced in half. The Outage Management System (OMS) has not been updated yet because the Work Order has not been closed out.

Solution/Action to be taken
None

Justification for no action
Most of the problems were caused by OMS errors and these errors are in the process of being fixed.

	Project	*Projected Year*
1	None	
2		
3		
4		

Circuit
TURJ533

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1148	461.16	5.07	90.91	2001

Root Cause of Performance

There were five wind related outages on 4/7/01, and three on 4/11/01. The 4/7/01 high wind outages totaled 147,276 minutes with the 4/11/01 outages at 819 minutes. There were three lightning outages, one failed a transformer fuse, one took out the substation recloser, and the third blew a power fuse on the substation transformer. The blown power fuse outage accounted for 99,876 customer outage minutes.

Solution/Action to be taken

1) 69 kV and 12 kV arresters are scheduled to be added to the power transformer in 2002 under the Turtle Substation 12kV Bus Rebuild substation scope. 2) The Turtle J533 471 REBD 0.5 MI distribution scope is scheduled to be constructed in 2002.

	Project	*Projected Year*
1	Turtle J533 471 REBD 0.5 MI	2002
2	Turtle Substation 12kV Bus Rebuild	2002
3	Circuit tree trimming	2003
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
ESSP1670

Zone: Fond du Lac		*Distribution Engineer*: Steve Weston		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
2281	317.51	3.01	105.61	2001

Root Cause of Performance

This circuit had 2 devices that operated 5 times in 2001. Recloser P1935 has been relocated to reduce the load on it. This recloser was operating at the coil rating of the recloser and any small disturbance caused the recloser to operate. The fuse(P1334) that operated 5 times was caused by a jumper that was too close to a guywire and was flashing over. This was difficult to find and the fuse has not operated since this was fixed. The loading on the line reclosers will be reduced when Ledgeview substation comes on line in 2002 and reduced more when STH 149 is rebuilt in 2003.

Solution/Action to be taken

Reroute feed to St. Peter area to the new Ledgeview Sub to relieve loading on line reclosers in 2003.

	Project	*Projected Year**
1	STH 149 Roadmove; FDL	2003
2	St. Peter Area Reroute	2003
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
KILX40

Zone: Baraboo		*Distribution Engineer:* Jon Pernsteiner		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
937	690.71	4.08	169.11	2001

Root Cause of Performance

This line is double circuit with the Wisconsin Dells Municipal Utility with WPL facilities on the top making it difficult to maintain and repair. Lightning is directly responsible for outages of this section of feeder circuit. In addition 16 lightning related outages produced 100,000 customer outage minutes and 29 tree related outages produced 122,298 customer outage minutes.

Solution/Action to be taken

Line clearance will be performed on this circuit this year (2002) and is expected to reduce the tree related outages. A project to construct a new 3 phase line to replace the double circuit line will be scoped.

	Project	*Projected Year**
1	Line Clearance	2002
2	Grounding and Add Lightning Arrestors	2002
3	FINNEGAN AVE RBLD 5.0MI OH 3P	2004
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
KILX69

Zone: Baraboo		*Distribution Engineer*: Jon Pernsteiner		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
611	968.36	5.64	171.77	2001

Root Cause of Performance

The SAIDI and SAIFI numbers were caused by 4 major events. A vehicle vs. pole accident occurred near the substation and accounted for 221,793 customer outage minutes affecting 611 customers. The second was the failure of the substation recloser affecting 611 customers and 70,211 customer outage minutes The third was a dig in causing 83,734 customer outage minutes affecting 502 customers. In addition, lightning comprised 20 outages, affecting 1,261 customers causing 123,741 customer outage minutes.

Solution/Action to be taken

A new substation was added in late 2001 and the exposure of this circuit has been cut in half. The line segment most exposed to trees and lightning is budgeted to be rebuilt.

	Project	*Projected Year**
1	DLC-COON BLUFF RD N RBLD (FIN FALL 2001)	2001
2	DLC-TROUT RD RBLD (2002)	2002
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
DELM248

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1876	713.52	3.42	208.86	2001

Root Cause of Performance

On 4/7/01 high winds caused outages totalling 724,808 customer outage minutes. There were multiple outages which increased response times. The equipment related customer outage minutes included a failed bypass switch - replaced; two overloaded transformers - replaced and up-sized; failed secondary connections -fixed; failed underground substation getaway – replaced. In addition, two tree related outages occurred and in both cases, the trees were trimmed. Circuit M248 is scheduled to be trimmed again in 2002.

Solution/Action to be taken

Verify M1498-S has adequate lightning protection and add additional protection if needed .

	Project	*Projected Year*
1	Verify lightning protection and add if needed	2002
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
TOCN2442

Zone: Dane County		*Distribution Engineer*: Jerry Batson		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1125	346.73	3.29	105.41	2001

Root Cause of Performance

The SAIDI, SAIFI, and CAIDI values were caused by one outage on the main circuit recloser and three outages on a branch recloser, which accounted for 3,264 customers out and 341,974 customer outage minutes. The largest outage was caused by a car hitting a power pole. The next two outages occurred during storms involving high winds and lightning. The last was a preventable outage caused by a tree that was not removed from a newly constructed line by a contractor.

Solution/Action to be taken

The first outage was caused by a car sliding off the road into the power pole. The power pole is not in a very vulnerable location so no action is required. The Portage Rd North Refurbishment project will be scoped to install lightning arresters reducing the lightning related outages.

	Project	*Projected Year**
1	Portage Rd North Refurbishment	2003
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
TOCN2443

Zone: Dane County		*Distribution Engineer*: Jerry Batson		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1009	292.55	3.48	83.96	2001

Root Cause of Performance

The SAIDI, SAIFI, and CAIDI values were caused by a failed terminator on a riser pole; an Outage Management System (OMS) error caused the outage minutes to be counted 3 times. The second outage had an unknown cause, however the line technician suspects it might have been a bad riser terminator.

Justification for no action

Because the driver for this circuits performance was data errors no action will be taken.

	Project	*Projected Year*
1	None	
2		
3		
4		

Circuit
PVWN2250

Zone: Janesville		*Distribution Engineer*: Pat Runde		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1487	196.93	5.52	35.66	2001

Root Cause of Performance

There were 4 outages with 2 being planned work, one employee error, and one tree related problem. As described in the 2001 circuit update report, this circuit has 2 projects associated with it. Both projects should be completed in early April, 2002 and a good portion of the circuit will be converted to 25 kV.

Solution/Action to be taken

Continue with the implementation of the existing projects.

	Project	*Projected Year**
1	PVWN2250 25kV conversion	2002
2	JVL N1236-N2250 GOAB's	2002
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
TROB1294

Zone: Baraboo		*Distribution Engineer*: Jon Pernsteiner		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
726	707.22	4.98	142.04	2001

Root Cause of Performance

The SAIDI and SAIFI numbers can be broken into 4 major events. First was a failed regulator that caused a circuit outage affecting 726 customers accounting for 128,502 customer outage minutes. Next were two storms with high winds and lightning causing 15 outages affecting 630 customers causing 117,707 customer outage minutes. Next are the tree related outages causing 7 outages affecting 77 customers causing 13,223 customer outage minutes. Last are the non-correctable outages caused by fire, vehicle, planned, and customer equipment causing 25 outages affecting 1161 customers causing 86,378 customer outage minutes.

Justification for no action

Tree clearance of 126.87 miles occurred late last year (2001) for this circuit.

	Project	*Projected Year*
1	None	
2		
3		
4		

Circuit
EARJ1757

Zone: Beloit		*Distribution Engineer:* Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1700	200.74	2.21	90.80	2001

Root Cause of Performance
The reason for this circuit being on the 2001 circuit list is a 69 kV bus outage at Shaw Substation caused by lightning.

Justification for no action
History indicates that 69kV buss outages are rare and it is not expected that this would occur again.

	Project	*Projected Year*
1	None	
2		
3		
4		

Circuit
TROB1293

Zone: Mineral Point		*Distribution Engineer*: Barry Bauman		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
933	267.84	3.44	77.82	2001

Root Cause of Performance
Lightning between the substation and the Village of Plain caused the substation recloser to operate placing this circuit on the 2001 list.

Solution/Action to be taken
This circuit is planned to be upgraded to 25kV to provide voltage and capacity support to the area. The project will add overvoltage protection to the line making it less susceptible to lightning.

	Project	*Projected Year**
1	TRO B1293 CTH B 25 KV CONVERSION 5 MI	2004
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
RRDP1605

Zone: Fond du Lac		*Distribution Engineer*: Steve Weston		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1459	139.65	2.36	59.12	2001

Root Cause of Performance

Of the outages on this circuit, two were caused by a contractor coming in contact with our lines and one occurred when we tipped a line for construction purposes and the neutral came in contact with a phase. There were three outages in an underground subdivision due to cable failure. A portion of this cable is scheduled to be replaced in 2002. The scope for this will be updated to include the remaining cable.

Solution/Action to be taken

Replace aged cable that is failing in the Rivera Heights subdivision.

	Project	*Projected Year**
1	FDL Raychem Splice 2000 Reily Drive(Redline)	2002
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
WIBM2557

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
870	246.93	1.30	190.09	2001

Root Cause of Performance

The majority of outages on this circuit were due to lightning, wildlife, trees, and wind. The high wind related outages on 4/11, 4/12, 7/22, 9/3, and 10/24 totaled 104,050 customer outage minutes. There were multiple outages on these dates, which greatly increased the outage restoration times.

Solution/Action to be taken

1) Circuit tree trimming is scheduled in 2003. 2) Verify that M1707-20T, M1060-20T, and M1348-40T have adequate lightning and wild life protection and add additional protection if needed.

	Project	*Projected Year**
1	Verify adequate lightning and wildlife protection	2002
2	Circuit tree trimming	2003
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
NCKE934

Zone: Baraboo		*Distribution Engineer*: Jon Pernsteiner		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
702	1440.47	6.67	215.93	2001

Root Cause of Performance

The SAIDI and SAIFI numbers are totally driven by storm/tree related outages accounting for 15 events affecting 2874 customers causing 868,313 customer outage minutes. This line is a 7 mile long 3 phase circuit to the Village of Endeavor. This line was constructed through the trees and in very non-accessible areas.

Solution/Action to be taken

A new substation (Endeavor Sub) to be constructed just south of Endeavor is scoped and scheduled for construction in 2003. Two new circuits constructed along the road will shorten the circuit to Endeavor and will be away from the trees to reduce the SAIDI and SAIFI numbers on this circuit.

	Project	*Projected Year**
1	EDV-69/12KV SUBSTATION	2003
2	EDV- FEEDER SOUTH	2004
3	EDV- FEEDER NORTH	2004
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
PORC757

Zone: Baraboo		*Distribution Engineer*: Jon Pernsteiner		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1497	369.59	3.57	103.44	2001

Root Cause of Performance

The SAIDI and SAIFI numbers can be broken into 2 major categories. The first is storms/lightning related. Four of these outages were on 2 devices affecting 4573 customers causing 496,801 customer outage minutes. The other was vehicle related causing 1 outage affecting 1494 customers causing 149,400 customer outage minutes.

Solution/Action had to be taken

This circuit will be evaluated for a possible rebuild / relocation of the facilites in the alley between Cook and Edgewater St.

	Project	*Projected Year**
1	EDGEWATER ALLEY RBLD. 0.75M 3PH	2004
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
RDRE1405

Zone: Beaver Dam		*Distribution Engineer*: Al Damyen		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
652	619.89	5.10	121.59	2001

Root Cause of Performance

The main causes for outages on this circuit are three fold: first is lightning, second is antiquated sections of distribution line and the third is more sectionalizing and recoordination should be done. One major outage that locked out circuit E1405-S was the failure of the Form 5 control panel for the substation recloser. This was corrected by installing a new control panel.

Solution/Action to be taken

The first plan of action is to install lightning arresters on the three phase lines that are exposed to the lightning strikes. The second action is to review the sectionalizing and coordination of this circuit. The third action is to complete the proposed projects three and four as stated below.

	Project	*Projected Year**
1	Install lightning arresters on distribution line (4 miles)	2002
2	Review the sectionalizing and coordination on this circuit.	2003
3	Road Moves: "T" and Losinski will mitigate outages for branch circuits E269-S and E645-S, respectively.	2003
4	Old Green Lake Rd. Rebuild 4 MI 1 PH 1/0 ACSR	2003

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
PVWN1557

Zone: Janesville		*Distribution Engineer*: Pat Runde		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1477	447.90	1.45	308.06	2001

Root Cause of Performance

The substation recloser on this circuit never locked open in 2001. All of the outages were associated with tap reclosers or fuses. The largest portion of outages were on recloser N4982 on the east side of town (protects Henke Rd) and this is currently planned to be rebuilt by 2004. Another outage was on a section of underground along Wright St that is also planned to get rebuilt this year.

Solution/Action to be taken

Rebuild 5 miles of 3ph overhead along Henke Rd and replace the underground cable along Wright Rd, just south of Milwaukee St. Project 1 listed below is nearly engineered and should be completed this year.

	Project	*Projected Year**
1	JVL 25KV PROJECT4-UNDERBUILD EAST	2002
2	HENKE RD-5MI-3PH OH-JANESVILLE	2004
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
TURJ534

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
635	333.30	5.47	60.99	2001

Root Cause of Performance

Equipment related customer outage minutes included: a failed arrestor - replaced; three failed transformers - replaced; and a floating insulator – repaired. There were five lightning outages that caused three failed transformer fuses, one locked out a recloser, and the fifth blew a power fuse on the substation transformer. The blown power fuse outage accounted for 132,930 customer outage minutes. The 69 kV bus does have arresters on it, but there are no arresters on the transformer - to be added in 2002.

Solution/Action to be taken

1) 69 kV and 12 kV arresters are scheduled to be added to the power transformer in 2002 under the Turtle Substation 12V Bus Rebuild substation scope. 2) Verify switches J325-S, and J621-30T have adequate lightning protection and add if needed.

	Project	*Projected Year**
1	Add Arresters to Turtle Substation Transformer	2002
2	Verify lightning protection	2002
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
PLRD1229

Zone: Port Edwards		*Distribution Engineer*: Mike Warntjes		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1227	297.99	1.59	187.83	2001

Root Cause of Performance

Since this circuit's conversion to 24.9 kV, there have now been two pole fires. This line has been infrared scanned, and several arresters with elevated temperatures were found and repaired. Another outage was listed in the outage management system as lasting 16 hours, however, the line was sectionalized and backfed, restoring service to all customers in 5 hours. The line was repaired later that day. One tap on this circuit (D6414) experienced four recloser lockouts in 2001. Causes were equipment failure, lightning, and wind/trees.

Solution/Action to be taken

Tap D6414 (Flak Road) should be rebuilt due to its performance, age/condition, and accessibility for a part of the line.

	Project	*Projected Year**
1	Flak RD RBLD 1PH 3.75 MI	2003
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
RIPE572

Zone: Beaver Dam		*Distribution Engineer*: Al Damyen		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1301	144.03	3.83	37.66	2001

Root Cause of Performance

The main causes for outages on this circuit are three fold: first is lightning, second is antiquated sections of distribution line and third is the large area of exposure that this circuit encompasses.

Solution/Action to be taken

The first plan of action would be to install lightning arresters on the three phase lines that are exposed to the lightning strikes. A few of the single phase lines would also get arresters installed as required from the outage report. The second action would be to complete the proposed projects two through four, as stated below. Regarding the circuit exposure, distribution engineering will work with the planning department to see if something can be done with this feature of the circuit. A review of the circuit coordination will also be done with the likelihood of adding more protection devices.

	Project	*Projected Year**
1	INSTALL LIGHTNING ARRESTERS ON DIST. LINE	2002
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
KATM1437

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
717	885.61	1.31	678.03	2001

Root Cause of Performance
On 9/7/01 a high wind outage was recorded as 595,827 customer outage minutes when it should have been 165,627 outage minutes; due to a restored time entered into OMS (Outage Management System) as 11:25 am instead of 01:25 am.

Justification for no action
Because this circuit's SAIDI was related to a data entry error no action is needed.

	Project	*Projected Year*
1	None	
2		
3		
4		

Circuit
OKEB861

Zone: Baraboo		*Distribution Engineer*: Jon Pernsteiner		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1165	184.72	1.65	112.17	2001

Root Cause of Performance
Three devices have 4 or more outage events. Switch B1647 has 4 animal related outages. Device B188 has 5 animal related outages and device B798 has 3 storm related and 1 animal related outages.

Solution/Action to be taken
Add wildlife protection on B1647 and B188. Verify that B798 has adequate grounding.

	Project	*Projected Year**
1	Circuit line maintenance	2002
2	Add wildlife protection B1647 and B188	2002
3	Verify grounding on B798	2002
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
KATM433

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
640	318.46	2.00	159.57	2001

Root Cause of Performance

Four equipment related customer outage minutes included bad underground - fixed; one failed transformer - replaced; one overloaded transformer – up-sized and replaced; and one failed arrester. There were nine lightning outages: Four failed transformer fuses; two failed line fuses; and four recloser lightning outages with one failed recloser. One lightning vs recloser outage recorded as 13 separate outages because the recloser location is not in the FIM system yet.

Solution/Action to be taken

Verify that M978-10T, M1260-30T, M810-S, and M1274-S have adequate lightning protection and add protection if needed. Work with GIS group to add J1274-S into the FIM system such that OMS recognizes the recloser location.

	Project	*Projected Year**
1	Verify lightning protection	2002
2	Update GIS	2002
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
LAGM1

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
674	295.41	3.27	90.34	2001

Root Cause of Performance

The equipment related customer outage minutes included a bad cutout and a bad jumper, both of which were replaced. There was one lightning related outage on a section of spacer cable which dropped the phase conductor. In addition 80,160 customer outage minutes were reported due to customer connection errors in our Outage Management System.

Solution/Action to be taken

1) Verify and add needed lightning protection on the spacer cable for circuit M1-S. 2) Add additional wildlife protection at transformer location 2-17-35.4 23/41 (was out twice in 2001 due to wildlife).

	Project	*Projected Year**
1	Wildlife protect transformer 2-17-35.4 23/41	2002
2	Verify lightning protection	2002
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
LAGM711

Zone: Beloit		*Distribution Engineer*: Kevin Kueng		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
578	202.29	1.95	103.6	2001

Root Cause of Performance
Two cable dig-ins by contractors were recorded as eight outages instead of two because of an outage management error. Tree related outage minutes accounted for 71,766 minutes, down from last year's total of 191,899. There were five lightning related outages, all lightning versus fuses.

Solution/Action to be taken
1) Check fuse to see if fuse numbers M655-FD, and M25-10T can be increased in size to eliminate possible fuse link damage from lightning strikes. 2) 37.93 miles of this circuit is scheduled to be trimmed in 2003.

	Project	*Projected Year**
1	Resize fuses	2002
2	Circuit tree trimming	2003
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
HAMC1076

Zone: Baraboo		*Distribution Engineer*: Jon Pernsteiner		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1285	285.66	2.84	100.74	2001

Root Cause of Performance

The SAIDI and SAIFI numbers can be broken into 3 major categories: 1) Storms, storm related lightning, and tree outages accounted for 29 events affecting 2572 customers. 2) Equipment failures accounted for 22 events affecting 545 customers. 3) Two vehicle related events affected 341 customers. Two devices had 4 or more events caused mainly by trees.

Solution/Action to be taken

It is expected that tree clearance will reduce virtually all of the tree related outages. Tree clearance is scheduled for this year (2002).

	Project	*Projected Year**
1	HAMC1076 LINE CLEARANCE.	2002
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
SUPN1075

Zone: Dane County		*Distribution Engineer*: Jerry Batson		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
837	380.16	6.01	63.22	2001

Root Cause of Performance

The SAIDI, SAIFI, and CAIDI values were caused by five major outages on the main circuit recloser. The first outage was caused by a line falling down during high winds. The next two outages occurred during a storm involving high winds and lightning. The fourth outage was for a house move. The fifth was caused by a tree branch cut by a contractor.

Solution/Action to be taken

The section of line that fell down on the first outage was rebuilt with new poles and wire. The remaining 3/4 mile section of this line will be submitted for rebuild. The storm outages should be reduced due to the new sections of line that will include arrestors. This should reduce the lightning related outages. The last two outages are non-recurring outages so no action is required.

	Project	*Projected Year**
1	Bird St. Three Phase Rebuild	2003
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
SMEL725

Zone: Janesville		*Distribution Engineer*: Pat Runde		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
717	563.93	4.39	128.32	2001

Root Cause of Performance

There was 1 outage on the substation recloser in 2001. It occurred 12/7 for 34 minutes and no problem could be found. The other large outages were linked back to a circuit recloser (N1903) that had been removed 3 years ago and is now a GOAB. OMS is also in error and lists more customers out than there really were. For the 4 outages on N1903, OMS shows a total of 540 customers being out each time for a total of 1,440,000 COM's, when in fact, one of the outages was a jumper burned open on 1 phase and another time, a planned outage had only 10 customers out of power. As a result, the 4 outages only affected a total of 380 customers resulting in 253,000 COM's.

Solution/Action to be taken

The circuit is in excellent condition. However, our FIM database needs to be updated for switch N1903 so that is now a GOAB instead of a recloser.

	Project	*Projected Year**
1	Update FIM database	2002
2		
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
KESD1923

Zone: Port Edwards		*Distribution Engineer*: Mike Warntjes		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
1012	471.51	5.28	89.34	2001

Root Cause of Performance

Outage indices in 2001 on this circuit were due to five outages to the whole circuit. One outage was due to a tree clearance contractor truck rolling over, and the other four were caused by high winds causing trees to fall into the line (two of which were on the 34.5 kV sub-transmission line). The area served by this line is heavily treed (Legend Lakes area in Menominee County).

Solution/Action to be taken

A recloser will be added on the main 3 phase circuit to improve sectionalizing. This should result in at least a 10-15% reduction in outage indices. Also, a tap fuse will be added. The 34.5 kV line has recently been patrolled to identify equipment problems and line clearance concerns. Additionaly the 34.5 kV system is planned to be scoped for reconfiguration and rebuild, improving its overall performance.

	Project	*Projected Year**
1	Add recloser, tap fuse (non-scoped)	2002
2	34.5kV rebuild	2003
3		
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

Circuit
MOOE741

Zone: Beaver Dam		*Distribution Engineer*: Alan Damyen		
# Customers	*SAIDI*	*SAIFI*	*CAIDI*	*Data Year*
813	614.25	6.97	88.17	2001

Root Cause of Performance

The major outages on this circuit are due to the antiquated main 12.47 KV circuit stem. Part of this section is six miles in length and does not have adequate lightning protection and grounding. A review of the circuit coordination should also be done because it appears that more sectionalizing devices would help mitigate outages.

Solution/Action to be taken

The first thing to be done is a review of the total circuit coordination. The second action is to prepare the scopes and construction work orders for proposed projects 2 & 3 as stated below.

	Project	*Projected Year**
1	Review and re-coordinate circuit	2002
2	CTH "XX" rbld 1.5 Mi 1ph 1/0 (Spacer Cable)	2003
3	HWY "22" rbld 6.0 MI 3 ph 477ACSR	2004
4		

* Projected dates are estimates only. All projects are reviewed and prioritized by the planning process approved by PSCW staff under docket 6680-UM-100.

PSCW 113.0604 2d) Accomplishment of Improvements in Prior Reports

AUBA443

Zone	Port Edwards
Distribution Engineer	Mike Warntjes
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
Project AUB443 477 Rebuild is engineered, scheduled for construction in 2002. Other projects are scheduled for 2003, 2004.

CADA190

Zone	Baraboo
Distribution Engineer	Jon Pernsteiner
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
2001 SAIDI is 7.86 and SAIFI is 0.05 caused by 2 outages affecting 9 customers accounting for 691 COM . This circuit had line clearance performed in 2001.
After the initial inspection line clearance appeared to be all that was necessary to improve the reliability of this circuit. This circuit had good reliability in 2001.

This is the final report on this circuit

CADA344

Zone	Baraboo
Distribution Engineer	Jon Pernsteiner
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
2001 SAIDI was 726 and SAIFI was 3.18. After the initial inspection line clearance appeared to be all that was necessary to improve the reliability of this circuit. This is scheduled for line clearance this year (2002). Tree growth and storm related outages continue to drive the SAIDI and SAIFI numbers. The part of this circuit is the segment protected by A194 and should benefit the most from line clearance.

I recommend that no action beyond the scheduled line clearance be taken at this time but that this circuit be reviewed again next year to make sure that line clearance has achieved the necessary results.

CADA401

Zone	Baraboo
Distribution Engineer	Jon Pernsteiner
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
2001 SAIDI is 6.28 and SAIFI is 0.13 caused by 5 outages affecting 34 customers accounting for 1615 COM . This circuit had line clearance performed in 2001.
After the initial inspection line clearance appeared to be all that was necessary to improve the reliability of this circuit. This circuit had good reliability in 2001.

This is the final report on this circuit

ELMK846

Zone	Mineral Point
Distribution Engineer	Barry Bauman
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
Additional investigation of circuit ELM K846 indicates that in addition to replacing the crossarms and insulators as orginally planned, the conductors should also be replaced. We plan on installing new crossarms, insulators, lightning arrestors and T-2 conductor in 2003.

FOON276

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
The Hanover Rebuild project has been engineered and is scheduled for construction in 2002.

JANN1234

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
There are 3 projects related to this circuit. Project 1: Janesville N1234 Rebuild was completed. Project 2: Court St Rebuild is 95% engineered and is scheduled to be constructed in 2002. Project 3: Freedom Tie Rebuild is 20% engineered and is scheduled to be constructed in 2002.

KESD1922

Zone	Port Edwards
Distribution Engineer	Mike Warntjes
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
Keshena-Shawano Tie is scoped and scheduled for construction in 2003.

LAGM711

Zone	Beloit
Distribution Engineer	Keving Kueng
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
Two action items were noted on the 2001 report: The completion of the 6.0 mile HWY 50 project which was completed in the fall of 2000, and to schedule line clearance for LAGM711 in 2002. The line clearance department has budgeted 37.93 miles for LAGM711 circuit in the 2003 tree trimming cycle.

LIBN3522

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
There are two projects associated with this circuit. Project 1: Construct Venture Sub and Getaways has been completed. Project 2: Beloit Avenue Roadmove is in engineering and has been delayed by the State DOT. It is tentatively scheduled for construction in 2003.

LIBN3524

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
Tripp substation and getaways have been constructed. A new project has been submitted and approved that affects the reliability of this circuit. The project is called Avalon Rd and will rebuild 3 miles of the main 3-phase circuit to 477 ACSR. It should be constructed by the end of 2003.

MLSN528

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
The Russell distribution circuits have been completed and reliability has improved.

This is the final report on this circuit

MLSN572

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
The Traxler N637 Reconfigure project is approximately 85% engineered and is scheduled to be completed in 2002.

MREJ1791

Zone	Beloit
Distribution Engineer	Kevin Kueng
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
Additional lightning protection identified in the 2001 report has been scheduled for 2003.

OAKP41

Zone	Fond Du Lac
Distribution Engineer	Steve Weston
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
A portion of CTH T was rebuilt in 2001. The remaining portion is scheduled to be constructed in 2003.

PDSB1050

Zone	Baraboo
Distribution Engineer	Jon Pernsteiner
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
Eight miles of tree clearance was performed at the end of 2001. The tree trimming has achieved the necessary reduction of SAIDI and SAIFI to acceptable levels.

This is the final report on this circuit

PVWN2250

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
There are (2) projects associated with this circuit. Project 1: PVW N2250 25kV Conversion is 95% constructed and is scheduled to be completed in early April 2002. Project 2: JAN N1236-PVW N2250 GOABs involves the installation of 5 Intelliteam Scadamate switches for distribution automation. The switches have been installed and are currently operating in a sectionalizing mode. Upon completion of Project 1, I will reconfigure the switches for full automation mode.

SUNN6605

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
There are two(2) projects associated with this circuit. Project 1: STH 11 & USH 14 Roadmove has been engineered and construction has started. It should be completed by early May, 2002. Project 2: JVL 25kV-USH 14 East of O has not been engineered. Construction is planned to be completed by the end of 2002.

TRAN616

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
The Russell distribution circuits have been completed and reliability has improved.

This is the final report on this circuit

TRAN637

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
The Traxler N637 Reconfigure project is approximately 85% engineered and is scheduled to be completed in 2002.

VIKN6442

Zone	Janesville
Distribution Engineer	Pat Runde
Data Year	2000
Report Year	2001

Status Update/Accomplishment of Improvements
The projects listed on this report are incorrect and this circuit does not have any action required. They were copied from circuit JANN1234 by mistake. This circuit is in excellent condition and is not planned for any construction.

This is the final report on this circuit

PSCW 113.0604 2e) New Reliability or Power Quality Programs

- Wisconsin Power and Light has enhanced its planning process in the area of physical condition evaluation. By leveraging the GIS system, detailed analysis is preformed to evaluate asset age, copperweld conductor location, high neutral conductors, and rejected poles. From this analysis WPL can focus resources on portions of the system that may contribute to reliability or safety concerns.

- To insure that underground distribution assets continue to provide quality service to our customers as they age, WPL has contracted with EPRI to conduct an aging asset evaluation to be completed in 2002. The study will help WPL integrate aging information into the GAP process.

PSCW 113.0604 2f) Long Range Electric Distribution Plans

- Stray Voltage Rebuilds – In 2001 WP&L invested about 1.5 million dollars in 48 rural rebuild projects to address concerns with stray voltage or primary neutral voltages.

- System Studies –Major project studies completed in 2001 include: Marion, Mineral Point, East Rockton, Tomah/Warrens, West Madison, and Burke (American Office Park). These studies identified system problems requiring substation additions or modifications along with numerous distribution line rebuild projects. Major project scopes derived from the studies included Powers Bluff, Flare Ave, American, Wilcox, Sheridan, Shawano, Keshena, Belle Plain, North West Beloit, Kennedy, New Glarus and Endeavor. Additionally, the Janesville 24.9kV conversion CPCN was approved by the PSCW.

- High Neutral – On September 30, 2001, WPL completed an investigation into High Neutral construction and filed a replacement plan with the PSCW. From the data collected, 162 projects were scoped with the GAP process replacing 170 miles of line at an estimated cost of 5.8 million dollars. WPL plans to replace 58 miles of these projects in 2002 at an estimated cost of 1.8 million dollars.

- Copperweld Replacement – WP&L continues to emphasize the replacement of copperweld conductor with the GAP process per the agreement reached in PSCW Docket 6680-UM-100. At this time WPL has approximately 175 miles of copperweld conductor scoped for replacement with 85 miles planned for 2002.

PSCW 113.0604 3a) Miles Reconstructed by Phase

	Year Reported For					
Year Reported In	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
1999	250	329	264	~~112~~		
2000	250	329	264	~~244~~	~~97~~	
2001				268	238	183

Note: This matrix contains the information reported in previous years to show changes in the amounts reported due to the time required to update WP&L's GIS system. An example is in the report for the year 1999, 112 miles of line retired/reconstructed were reported. However, not all work orders completed in 1999 were mapped into the Geographic Information Services (GIS) by the date of the PSCW-113 reporting. As an update for the year 2001, we now report 268 miles retired/reconstructed in 1999.

At this time, miles retired/reconstructed is not tracked according to single- and three- phase circuits. The information will be made available in subsequent years with the upgrade to the GIS.

PSCW 113.0604 3b) Total Miles by Voltage Level

	1996	1997	1998	1999	2000	2001
Miles in Service	17,924	18,457	18,954	19,256	19,322	19,571
Under 22 kV					19,212	19,454
22 to 30 kV					85	91
31 to 40 kV					26	26
41 to 50 kV					-	-
51 to 70 kV					-	-
Over 70 kV					-	-

Note: The breakout by voltage level of the miles in service is an estimate at this time. This information will be made available in subsequent years with the upgrade to the GIS.

PSCW 113.0604 3c) Monthly Average Speed of Answer for Calls

CUSTOMER SERVICE & BILLING						
	Number of calls to live agent	Number of calls to VRU	TOTAL queue time for a live agent (secs)	TOTAL queue time for VRU	OVERALL Speed of Answer (secs)[1]	Live Agent Speed of Answer (secs)[2]
Jan	57,217	3,542	1,303,818	5,631	21.55	22.79
Feb	55,509	2,867	1,155,506	11,805	20.00	20.82
Mar	56,352	3,267	892,528	13,558	15.20	15.84
Apr	64,962	3,718	2,212,886	15,227	32.44	34.06
May	68,814	3,657	2,499,922	17,163	34.73	36.33
Jun	64,011	3,458	1,661,218	16,290	24.86	25.95
Jul	62,310	3,224	1,033,327	15,130	16.00	16.58
Aug	67,190	3,628	1,196,403	15,178	17.11	17.81
Sep	59,389	3,085	1,276,960	14,552	20.67	21.50
Oct	66,327	3,574	1,052,810	9,886	15.20	15.87
Nov	45,017	2,614	643,456	7,223	13.66	14.29
Dec	36,580	2,179	415,875	5,740	10.88	11.37
Year 2001	703,678	38,813	15,344,709	147,383	20.87	21.81

GAS & WATER EMERGENCIES[3]						
	Number of calls to live agent	Number of calls to VRU[4]	TOTAL queue time for a live agent (secs)	TOTAL queue time for VRU[4]	OVERALL Speed of Answer (secs)[1]	Live Agent Speed of Answer (secs)[2]
Jan	1,530	0	16,016	0	10.47	10.47
Feb	1,364	0	18,592	0	13.63	13.63
Mar	1,095	0	11,163	0	10.19	10.19
Apr	1,170	0	16,104	0	13.76	13.76
May	1,038	0	13,266	0	12.78	12.78
Jun	1,360	0	13,983	0	10.28	10.28
Jul	1,102	0	9,656	0	8.76	8.76
Aug	1,374	0	13,370	0	9.73	9.73
Sep	1,412	0	16,443	0	11.65	11.65
Oct	1,737	0	17,019	0	9.80	9.80
Nov	1,217	0	9,254	0	7.60	7.60
Dec	1,288	0	11,700	0	9.08	9.08
Year 2001	15,687	0	166,566	0	10.62	10.62

OUTAGES						
	Number of calls to live agent	Number of calls to VRU	TOTAL queue time for a live agent (secs)	TOTAL queue time for VRU	OVERALL Speed of Answer (secs)[1]	Live Agent Speed of Answer (secs)[2]
Jan	3,266	435	60,544	5,704	17.90	18.54
Feb	3,247	603	70,494	8,026	20.39	21.71
Mar	3,725	566	60,731	7,443	15.89	16.30
Apr	9,404	4,846	195,287	63,088	18.13	20.77
May	6,563	1,878	149,724	24,895	20.69	22.81
Jun	17,753	9,019	585,956	117,718	26.28	33.01
Jul	9,504	2,057	183,606	27,068	18.22	19.32
Aug	11,984	3,550	230,873	46,773	17.87	19.27
Sep	8,054	2,170	176,245	28,492	20.03	21.88
Oct	7,032	1,189	115,946	2,122	14.36	16.49
Nov	4,784	868	66,477	1,515	12.03	13.90
Dec	4,340	855	81,220	1,556	15.93	18.71
Year 2001	89,656	28,036	1,977,103	334,400	19.64	22.05

Notes: 1) The calculation for OVERALL speed of answer is as follows:

$$\frac{\text{Total queue time for a live agent + Total queue time for VRU}}{\text{Number of calls to live agent + Number of calls to VRU}}$$

2) The calculation for Live Agent Speed of Answer is as follows:

$$\frac{\text{Total queue time for a live agent}}{\text{Number of calls to live agent}}$$

3) Gas and water emergency calls cannot be separated. This represents the total calls for gas and water emergencies.

4) All calls to the gas and water emergency line are handled by a live agent.

PSCW 113.0604 3d) Average Number Days to Install and Energize a New Service

ELECTRIC NEW SERVICE DATA								
	1995		1996		1997		1998 *	
Month	Projects	Avg. Days	Projects	Avg. Days	Projects	Avg. Days	Projects	Avg. Days
Jan	67	3.8	237	4.7	315	4.3	261	*
Feb	45	4.5	195	4.8	184	4.7	273	*
Mar	49	4.8	177	4.5	175	4.3	251	*
Apr	109	4.5	453	4.7	366	4.7	525	*
May	174	4.8	612	5.0	434	4.9	636	*
Jun	134	4.2	655	4.8	477	4.9	670	*
Jul	115	4.8	690	4.7	422	5.0	799	*
Aug	160	4.5	690	4.7	317	4.9	702	6.6
Sep	223	5.2	560	4.8	215	4.6	695	8.8
Oct	268	5.0	650	5.1	214	4.2	727	8.7
Nov	324	4.6	616	4.9	119	4.3	714	9.9
Dec	265	4.8	466	4.9	87	5.0	687	14.1
Total	**1933**	**4.6**	**6001**	**4.8**	**3325**	**4.7**	**6940**	**9.6**

	1999*		2000*		2001			
Month	Projects	Avg. Days	Projects	Avg. Days	Projects	Avg. Days		
Jan	292	16.2	381	12.4	383	17.5		
Feb	201	12.6	316	14.1	293	12.1		
Mar	143	7.9	430	12.5	332	12.1		
Apr	483	10.4	557	12.1	587	10.8		
May	624	11.5	768	11.1	792	12.8		
Jun	666	13.0	775	17.3	698	14.5		
Jul	660	12.6	722	12.5	800	11.9		
Aug	751	12.6	842	12.4	816	10.8		
Sep	659	14.6	689	12.7	673	11.5		
Oct	830	11.3	811	16.1	899	11.3		
Nov	748	11.3	859	12.9	806	10.9		
Dec	729	13.7	554	17.2	690	12.3		
Total	**6786**	**12.3**	**7704**	**13.6**	**7769**	**12.1**		

Note: WP&L implemented a new Work Management System (WMS) in 1997. A feature was designed into WMS to help automate the collection of new service data. The company began using the WMS system to capture new service data in August of 1998. The current version of WMS does not have the capability of excluding weekends, therefore, the days to install a service will include weekend days whereas data prior to 1998 included week (working) days only.

PSCW 113.0604 3e) Total Number of Customer Complaints

CUSTOMER COMPLAINTS					
		Complaints by Month			
	Month	1998	1999	2000	2001*
	Jan	114	103	117	766
	Feb	77	125	122	708
	Mar	75	90	103	438
	Apr	97	105	79	469
	May	122	102	129	502
	Jun	160	142	82	517
	Jul	114	154	117	476
	Aug	120	119	180	520
	Sep	135	146	151	437
	Oct	121	138	157	459
	Nov	79	88	132	251
	Dec	82	89	138	185
	Total	**1296**	**1401**	**1507**	**5728**
Code	**Category**	**Complaints by Category**			
100-199	Billing	760	849	995	3400
213-215	Billing (Payment Arrangements)	81	126	129	669
	Other	286	275	231	1118
804-806	Outages	126	110	89	86
807-802	Power Quality	2	0	7	74
406	Property Damage	33	39	53	376
412,914,&801	Safety	8	2	3	5
	TOTAL	**1296**	**1401**	**1507**	**5728**

*Note: In late 2000, WP&L implemented a new customer feedback system. Prior to implementation, this information was only collected from telephone complaints. The "new" customer feedback system includes information from a variety of sources including in-person, telephone, email, written correspondence, customer surveys, and the internet web site as well as problems brought to our attention via the PSCW. Therefore, information and data since that implementation date may not be comparable to previous years' information.

PSCW 113.0604 3f) Total Annual Tree Trimming Budget and Actual Expenses

	1996	1997	1998	1999	2000	2001
Expenses	$5,097,416	$4,942,502	$4,214,189	$4,273,443	$5,457,253	$6,113,776
Budget	$5,479,602	$4,939,903	$4,469,400	$4,159,374	$5,199,960	$6,239,568

PSCW 113.0604 3g) Total Annual Miles of Line Tree Trimmed

	1996	1997	1998	1999	2000	2001
Miles Trimmed						
Projected					3,021	3,284
Actual	3,135	3,355	2,242	2,198	2,848	3,360
Miles Treated				2,508	1,585	320

Note: The company line clearance program is emphasizing herbicide treatment as a more cost-effective means of vegetation management. For this reason, starting in 1999 Alliant Energy will begin reporting the miles of line treated with herbicide as well as the miles of line trimmed.

PSCW 113.0605 Initial Historical Reliability Performance

OUTAGE PERFORMANCE DATA						
	1996	1997	1998	1999	2000	2001
CAIDI *	1.22	1.63	2.86	1.59	2.31	2.83
SAIDI *	1.64	2.21	5.12	2.24	3.26	4.21
SAIFI *	1.35	1.36	1.79	1.41	1.41	1.49

Note: In 1998 major storms accounted for over 57 million outage minutes or 48% of the total SAIDI hours.

In 2000 major storms accounted for over 31 million outage minutes or 39% of the total SAIDI hours.

In 2001 major storms accounted for over 59 million outage minutes or 57% of the total SAIDI hours.

CAIDI (Hrs of Interruption/Customer Interruptions)
SAIDI (Hrs of Interruption/System Customers)
SAIFI (Customer Interruptions/System Customers)
* Values are calculated using ALL reported customer outages (including major storms).

Appendix A – Circuit Ranking of 2001 Data Using 2001 Reporting Method